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A Revision of the Subgenus *Melanonemotelus* of America North of Mexico (Diptera, Stratiomyidae)*

BY

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ABSTRACT. This is a revision, based primarily upon male genitalic characters, of the American species of *Melanonemotelus*, genus *Nemotelus*, north of Mexico. Previous to this paper 15 species from this region had been described. Nine new species are described, and all old species are redescribed. Five species are placed in synonymy. In addition, the range of the European species, *Nemotelus nigrinus* Fallen, is extended to this region, as four American species are placed in synonymy with it.

New species described: *Nemotelus politus, N. jamesi, N. variabilis, N. centralis, N. halophilus, N. sabroskyi, N. communis, N. picinus, N. tenuistylus.*

Species placed in synonymy: *Nemotelus carneus* Walker 1849 (syn. of *N. nigrinus* Fallén 1817), *N. crassus* Loew 1861 (syn. of *N. nigrinus* Fallén 1817), *N. unicolor* Loew 1861 (syn. of *N. nigrinus* Fallén 1817), *N. carbonarius* Loew 1865 (syn. of *N. nigrinus* Fallén 1817), *N. fulvicornis* James 1936 (syn. of *N. glaber* Loew 1872).

INTRODUCTION

The subgenus *Melanonemotelus* of the genus *Nemotelus* has long been in need of revision. These flies possess few distinct external characters which are useful in their determination. For this reason and because of great individual variation, there has been much taxonomic confusion. Examination of the male genitalia showed the extent of this confusion. It became apparent that several described species were poorly defined and that several were as yet undescribed. This revision of the subgenus *Melanonemotelus* is based primarily on male genitalic characters. These characters generally exhibit noticeable diversity between species which otherwise appear the same. They are, however, relatively stable within species and are thus considered reliable. Because of the simplified

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structure of the female genitalia, no usable characters were found there. Thus as might be expected, the females of several species are very similar, and determination is often impossible without males.

The range of *Melanonemotelus* includes North, Central and South America, the West Indies, northern Europe, and presumably northern Asia. This revision includes only those species of North America north of Mexico. The type specimens of the three described species from Mexico have been destroyed, and because of the lack of sufficient material and absence of genitalic description or illustration of the types, further consideration of species from this region is not feasible at this time.

The occurrence of these flies is sporadic. At certain times they appear by the thousands on their favorite host flowers. The adults are sluggish and, while feeding, may be taken by hand. Umbellifers and composites such as goldenrod are among the preferred host flowers.

Little is known of the immature stages. The larvae of *Nemotelus* (*s. str.*) are known to be aquatic, some living in saline water. It seems likely that larvae of *Melanonemotelus* occur in similar habitats. *N.* (*Melanonemotelus*) *melanderi* and *sabroskyi* are limited to the Atlantic coast. *N.* (*Melanonemotelus*) *halophilus* has been collected only along the Texas gulf coast and from salt marshes in New Mexico and Kansas. The author has collected *N.* (*Melanonemotelus*) *nigrinus* along mountain streams in Utah.

The flies of this subgenus are very small in comparison with most other Stratiomyidae and are shining black, usually with yellowish markings. In two species from Florida and the West Indies the males differ from all others of the subgenus in having abdomens predominantly whitish. The face of *Melanonemotelus,* as in all *Nemotelus,* is produced anteriorly into a cone to accommodate the long proboscis. The male and female differ strikingly in the head. The males are holoptic, the eyes very large and covering most of the head. The frontal spots, when present, are contiguous. In the female the eyes are smaller, the frontal spots separated, and the facial prominence longer (Figs. 1-8). The wing venation is much reduced, the posterior veins merely impressions in the wing membrane.

An attempt was made to find some characters in the genitalic structure of each species which might indicate relationships. However, where it was possible to group species according to similarities

in genitalia, it was found that the component species of each group usually differed greatly in external appearance. On the other hand, certain species very similar externally show striking differences in the genitalia (*e. g., N. melanderi* and *N. halophilus*). The obvious similarities are indicated in the discussions of the individual species.

The paratypes of new species herein described have been deposited in the Snow Entomological Museum at the University of Kansas and in the collection of the institution or person from whom they were borrowed. Where several paratypes were designated, pairs have been deposited in various other institutions including the United States National Museum.

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MALE GENITALIA

(Figs. 10, 11, and 12)

Techniques. Having been removed from the specimen, the genitalia were placed in a ten-percent solution of KOH and left overnight. They were rinsed in distilled water and placed in glycerin. For preservation they were kept in a microvial containing glycerin and attached to the pin of the corresponding specimen. For study it was found necessary to separate the genital capsule from the terga which form a flap over the capsule. It was not necessary to remove the aedeagus from the gonocoxites. So doing often resulted in damage to certain parts because of the small size of the genitalia.

Description. The gonocoxites are fused both dorsally and ventrally, the ventral fusion being much broader. From the base of the dorsal side of the gonocoxites there extends basally a pair of long fingerlike apodemes. On each side of these apodemes, and sometimes between them, the gonocoxites are widely emarginate. Each of these emarginations may be completely or partially filled by a thin lamella (basal lamella of gonocoxites). The absence or extent of these lamellae is a useful character in determining certain species. The gonostyli are freely articulated to the latero-posterior portion of the gonocoxites. Mesal to the gonostyli and forming dorsoventral bridges adjacent to them are a pair of stylus-like processes extending apically. The posterior margin of the ventral gonocoxal bridge may be deeply or shallowly emarginate.

The aedeagus consists of two main branches: a dorsal process and the aedeagus proper. The dorsal process is bifid distally in all species of this subgenus. It is attached to the dorsal gonocoxal bridge by a narrow membrane. The ventral branch or aedeagus proper consists of three lobes: a median penis and two lateral lobes, here called penis valves. The latter are membranous like the penis except in one species (*N. jamesi*) in which they appear sclerotized and pincerlike (Fig. 17b). At the base of the aedeagus is the aedeagal apodeme, which varies in length according to species.

TAXONOMIC SECTION

The genus *Nemotelus* of North America was revised by Melander (1903), who suggested the possible significance of vein R_{4+5} when he noted its unforked condition in certain species. Enderlein

(1936) divided the genus and placed *N. nigrinus* Fallén, the only European species without the anterior branch of vein R_{4+5}, in a separate genus, *Nemotelinus*. Because this name was preoccupied in the family Staphylinidae of Coleoptera, Lindner (1938) published the name *Melanonemotelus* as a subgenus of *Nemotelus* to include *N. nigrinus*.

The genus *Nemotelus* has been divided according to the following combinations of characters: vein R_{4+5} forked (R_4 and R_5 present and separate distally), and males with mostly whitish abdomen (*Nemotelus s. str.*); vein R_{4+5} not forked (only R_5 present distally), and males nearly entirely black (*Melanonemotelus*). While these combinations of characters apply well to the European species, they fail to hold up when all of the North American species are considered. *N.* (*Nemotelus s. str.*) *bruesi* Melander and *pallipes* Say are both black but have vein R_{4+5} forked. *N.* (*Melanonemotelus*) *flavicornis* Johnson and *slossonae* Johnson both have mostly whitish abdomens in the males, but vein R_4 is not forked.

A study of the male genitalia substantiates the significance of the nature of vein R_4 in defining the subgenera. In all forms in which vein R_4 is simple, the dorsal process of the aedeagus (Fig. 10) is well developed and has two apical prongs. Examination of several species having vein R_4 forked, revealed that the dorsal process of the aedeagus had no apical prongs. Besides North American species, forms from Europe, Central America and South America were examined.

Key to Subgenera of *Nemotelus* Geoffroy

Vein R_4 present (vein R_{4+5} forked distally); dorsal process of aedeagus without apical prongs . . . . . *Nemotelus* (*s. str.*)

Vein R_4 absent (vein R_{4+5} not forked distally) (Fig. 9); dorsal process of aedeagus with apical prongs (Fig. 12) . . . *Melanonemotelus* Lindner

Subgenus Nemotelus Geoffroy

Nemotelus Geoffroy, 1762, Histoire abregée des Insectes qui se trouvent aux environs de Paris, dans laquelle ces animaux sont ranges suivant un ordre méthodique. Paris, Durand, vol. 6, p. 542.

Nemotela Latreille, 1796, Precis des caractères des Insectes disposes dans in Ordre natural, p. 164.

Nematotelus Osten Sacken, 1863, Cat. of Desc. Dipt. of N. Amer., Amer., Smithson. Inst. Misc. Coll., vol. 16, p. 48. Type species: *Musca pantherina* Linnaeus, 1758.

A key to the North American species of this subgenus has been presented by James (1936).

Subgenus MELANONEMOTELUS Lindner

Nematotelus Seguy, 1926, Faune de France. Paris, No. 13, p. 30. (*nec Nematotelus* Osten Sacken, 1863.)

Nematolinus Enderlein, 1936, Zweiflügler Diptera. Die Tierwelt Mitteleuropas. Leipzig, vol. 6, teil 3, p. 79 (type species: *Nemotelus nigrinus* Fallén, 1817; monobasic.)

Melanonemotelus Lindner, 1938, Die Fliegen der Palaearktischen Region. Stuttgart, E. Schweizerbart'sche verlagsbuchhandlung, vol. 4, p. 107 (type species: *Nemotelus nigrinus* Fallén, 1817; monobasic).

The body surface in this subgenus is shining black, often with a bluish or greenish iridescence. The mesonotum is rugulose, especially toward the lateral margins, but in some species it may be completely smooth and highly polished. The pile is usually short and inconspicuous, but may be long and dense in some species, especially on the dorsum of the thorax. The facial prominence varies in length, but less so than in *Nemotelus* (*s. str.*). Two creamy-white spots are present on the frons in several species. The antennae are situated noticeably higher up on the facial prominence than in *Nemotelus* (*s. str.*) and vary little in form. In the smaller species they are usually shorter and more compact. In one species (*glaber*) the basal segments are typically yellowish. The absence of vein R_4 in the wing is the most distinctive character.

In the following key it will be noted that certain couplets apply only to males (couplets 9-15, 20, and 25). Good external characters being very few in this subgenus, it was found necessary to use such difficult characters as length and abundance of pile and relative length of the facial prominence. The latter is measured from its apex diagonally toward the nearest margin of the eye. The pile in the female is usually considerably shorter than in the male; thus, couplet 16 may be difficult to use.

KEY TO THE SPECIES OF THE SUBGENUS MELANONEMOTELUS OF AMERICA NORTH OF MEXICO.

1. Humeral callus with at least anterior half black 6
   Humeral callus with less than anterior half black, may be entirely yellowish white 2
2. Abdomen wholly black ..... *tenuistylus*
   Abdomen whitish or with a pale yellow lateral line on each side 3
3. Thorax bare or nearly so, hairs of dorsal anterior part separated by length of a hair or more; male with abdomen mostly whitish (Florida) 4
   Thorax with conspicuous pile, hairs of dorsal anterior part separated by much less than length of a hair; male with abdomen mostly black 5

4. Thorax shining black; middle tibiae brown; humeral callus with anterior corners black ..... *slossonae*
   Thorax with distinct blue iridescence; middle tibiae yellow; humeral callus wholly creamy white ..... *flavicornis*
5. Apices of abdominal terga five and six black, not creamy white; length of facial prominence less than one third width of eye; female with large postocular creamy white spot ..... *lambda*
   Apices of abdominal terga five and six creamy white; length of facial prominence at least one third width of eye; female without creamy white postocular spot ..... *albimarginatus*
6. Frons with two creamy white or buff spots, contiguous in male 7
   Frons immaculate or with dark brown spots 16
7. Hind tibiae mostly yellowish, with only narrow black band around mesal portion; abdomen with thin, pale yellow lateral line on each side; large species ..... *canadensis*
   Hind tibiae black, at most with the bases and apices yellowish; abdomen without pale yellow lateral line on each side 8
8. All tibiae entirely black except for brownish extremities; body color shining black ..... *tristis*
   Fore and middle tibiae yellowish; body color black, usually with bluish or greenish iridescence 9
9. Pile on dorsum of thorax long over entire surface 10
   Pile on dorsum of thorax mesally very short and inconspicuous, much longer near margins of mesonotum 12
10. Male: Pile on dorsum of thorax very fine, long but inconspicuous, erect or nearly so, whitish; posterior half of humeral callus creamy white as seen from dorsal aspect; gonocoxal ventral bridge not deeply emarginate, but with an apparent double notch in posterior margin, gonostyli curved, with blunt apices (Fig. 29) ..... *communis*
    Male: Pile on dorsum of thorax shining and conspicuous, sometimes giving a "shaggy" appearance, often with a buff tinge; humeral callus usually mostly black; gonocoxal ventral bridge deeply emarginate, without an apparent double notch; gonostyli either curved and with sharp apices, or straight and with blunt apices (Figs. 15, 16, and 18) 11
11. Gonostyli strongly curved, apices pointed (Fig. 16c) (Distribution mainly Great Basin and Rocky Mountain regions) ..... *politus*
    Gonostyli straight or only slightly curved, apices rounded, blunt (Fig. 18c) (Distribution mainly west of Sierra Nevada and south along Pacific coast) ..... *arator*
12. Knobs of halteres chalky white 13
    Knobs of halteres pale yellowish buff or partly brown 15
13. Male: Gonocoxites with basal lamellae absent or only slightly evident (Fig. 14) ..... *politus*
    Male: Gonocoxites with basal lamellae complete (Figs. 19 and 20) 14
14. Penis valves black, pincerlike, sclerotized (Fig. 19) ..... *jamesi*
    Penis valves transparent, membranous, narrow and inconspicuous (Fig. 20) ..... *variabilis*

15. Knobs of halteres wholly pale yellowish buff, sometimes paler beneath (Atlantic Coast) ..... *sabroskyi*
    Knobs of halteres with clearly defined brown or buff blotch restricted to dorsoposterior area ..... *picinus*
16. Dorsum of thorax with pubescence over entire surface, but often extremely short and inconspicuous mesally especially in female; at least a few hairs immediately anterior to scutellum 17
    Dorsum of thorax bare mesally, sometimes with a few very short hairs anteriorly, but never immediately anterior to scutellum 21
17. Facial prominence of male less than one third width of eye (Fig. 8a); small species, about 3 mm. in length 18
    Facial prominence of male at least one third width of eye as seen from lateral aspect (Figs. 1 and 4); length 3.5 mm. or longer 19
18. Abdomen with buff or light yellow lateral line on each side, these lines very thin in female; basal lamellae of gonocoxites absent (Fig. 23) ..... *halophilus*
    Abdomen without buff lateral lines; basal lamellae of gonocoxites complete (Fig. 22) ..... *melanderi*
19. Facial prominence very long, its length in male half of width of eye viewed laterally; its length in female about equal to width of eye; frons never with spots (Fig. 1) ..... *beameri*
    Facial prominence not noticeably long and tapering, its length in male less than half the width of eye viewed laterally; its length in female less than width of eye; frons with or without brown spots (Fig. 4) 20
20. Dorsal process of aedeagus with apical prongs convergent; base of aedeagus strongly curved (Fig. 20) (southern species, California to Florida and into Mexico) ..... *variabilis*
    Dorsal process of aedeagus with apical prongs divergent; base of aedeagus not strongly curved (Fig. 21) (Great Lakes region west to South Dakota) ..... *centralis*
21. All tibiae completely black or dark brown ..... *glaber*
    Fore tibiae at least partly yellow 22
22. At least basal segments of antennae yellow or yellowish brown 23
    Antennae wholly black or dark brown 24
23. Gonostyli with strongly curved outer edges, apices pointed; penis valves pointed; gonocoxal apodemes short, convergent (Fig. 14). Knobs of halteres with brown or buff blotch only on dorsal half *glaber*
    Gonostyli slightly curved, not so sharply pointed; penis valves truncated, widest at apices; gonocoxal apodemes long, parallel (Fig. 30); knobs of halteres with dorsal brown or buff blotch nearly covering distal end ..... *picinus*
24. Knobs of halteres partly brownish or entirely white; aedeagus brown, sclerotized, the penis and penis valves forming three well-separated prongs (Fig. 13); facial prominence of female as long as width of eye or nearly so, as seen from lateral aspect (some *beameri* females may key out here. Compare Figs. 1b and 2b) ..... *nigrinus*

Knobs of halteres always partly brownish; aedeagus membranous, penis and penis valves contiguous; facial prominence of female short, about half as long as width of eye as seen from lateral aspect 25

25. Basal lamellae of gonocoxites large, extending nearly to apices of apodemes; penis merely a short lobe between penis valves (Fig. 21) ..... *centralis*

Basal lamellae of gonocoxites absent, apodemes long, parallel; penis long, longer than prongs of dorsal process (Fig. 30) ..... *picinus*

Nemotelus nigrinus Fallén

(Figs. 2, 13)

Nemotelus nigrinus Fallén, 1817, Diptera Sveciae, vol. 6, p. 3; Meigen, 1822, Syst. Beschreib. der bekannten Eur. Zweiflüg. Insecten, vol. 3, p. 1175; Macquart, 1934, Hist. Nat. des Ins. Dipteres, vol. 1, p. 266; Zetterstedt, 1842, Dipt Scand., vol. 1, p. 151; Walker, 1851, Insecta Brittanica, vol. 1, p. 26; Schiner, 1862, Fauna Austriaca, Die Fliegen, vol. 1, p. 5; Siebke, 1874, Insectorum Norvegicorum, fasc. 1, p. 7; Van der Wulp, 1877, Diptera neerlandica, p. 447; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 190; Lundbeck, 1907, Diptera Danica, part 1, p. 30; Verrall, 1909, Brit. flies, vol. 4, p. 125; Seguy, 1926, Faune de France, no. 13, p. 30; James, 1951, Proc. Ent. Soc. Wash., vol. 53, p. 343.

Nemotelus carneus Walker, 1849, List of the Specimens of Dipterous Insects in the Collection of the British Museum, part 3, p. 521; Melander, 1903, Psyche, vol. 10, p. 178; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 190 (new synonymy).

Nemotelus crassus Loew, 1861, Diptera Americae Septentrionalis Indigena, Cent. III, p. 109; Williston, 1885, Can. Ent., vol. 17, p. 128; Melander, 1903, Psyche, vol. 10, p. 175; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 190; Curran, 1927, Roy. Soc. Canada, Trans., sect. 5, vol. 21, p. 225 (new synonymy).

Nemotelus unicolor Loew, 1861, Diptera Americae Septentrionalis Indigena, Cent. III, p. 109; Williston, 1885, Can. Ent., vol. 17, p. 128; Melander, 1903, Psyche, vol. 10, p. 176; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 190; Curran, 1927, Roy. Soc. Canada, Trans., sect. 5, vol. 21, p. 224; Leonard, 1928, Cornell Agric. Expt. Sta., Mem. 101, p. 753; Knowlton, 1931, Can. Ent., vol. 63, p. 153 (new synonymy).

Nemotelus carbonarius Loew, 1865, Diptera Americae Septrentriónalis Indigena, Cent. VIII, p. 119; Melander, 1903, Psyche, vol. 10, p. 177; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 190; Leonard, 1928, Cornell Agric. Expt. Sta., Mem. 101, p. 753 (new synonymy).

This is a widespread northern European and northern North American species. Although the type was not examined by this author, several specimens from England and northern Sweden were available and their genitalia were examined. The form known as *unicolor*, which is widespread in Canada, Alaska, and northern United States, shows no significant differences, either externally or in the genitalia, from European *nigrinus*, except that in some specimens the knobs of the halteres are somewhat darkened. The type of *carbonarius*, although smaller, has genitalia identical with *ni-*

grinus. Its halteres are darkened, unlike typical *nigrinus,* and the thoracic lateral lines are almost obliterated. However, intermediate conditions between the two are frequently encountered, and no distinct line of separation was found possible. The type of *crassus,* a female, appears to be merely a slight variant of *nigrinus* with the second antennal segment yellowish apically. In all other respects it is like *nigrinus,* which cannot be confused with other species found in Rhode Island, the type locality of *crassus.* The type of *carneus,* also a female, was not available to the author, but the description agrees with that of *nigrinus,* and the type locality (St. Martin's Falls, Albany River, Ontario) is within the range of only that species.

In general, the body proportions, especially in the head, are between *beameri* and *picinus,* but some individuals approach or equal these species in this respect. Examination of the male genitalia is usually necessary for determination. However, the bare mesal portion of the dorsum of the thorax distinguishes it from *beameri* males, and the wholly black or dark brown antennae nearly always distinguishes it from *glaber,* in which the basal segments are yellow or yellowish brown.

Male: Body color shining black, usually with bluish iridescence on facial prominence and frons. Facial prominence moderately long (Fig. 2a); frons without pale spots; antennae brownish black to black. Thorax with rather sparse, white pile, becoming bare toward mesal portion of mesonotum; scutellum nearly bare; mesonotum with yellowish lateral margins forming a thin line on each side; humeral calli with small yellowish spot above each spiracle. Knobs of halteres white (in some specimens ranging from tan to dark brown on apical portions). Femora black with yellow apices; fore and middle tibiae yellow, hind tibiae mostly black with yellow bases and apices; tarsi pale yellow, apical segments brownish. Abdomen concolorous with thorax, but less pilose. Gonostyli with outer edges curved subapically; emargination of ventral bridge of gonocoxites V-shaped; apodemes short; basal lamellae moderately developed, covering nearly half of emarginations; aedeagus fork-like, the penis valves pointed, more or less straight but directed slightly mesad; penis shorter than, and distinctly separated from penis valves from point of junction. Length, 3.5-4.5 mm.

Female: Like male except for sexual differences in head: eyes smaller, separated; facial prominence longer (Fig. 2b).

Distribution: ARIZONA: Oak Creek Canyon. CALIFORNIA: Lone Pine, Inyo Co.; Tejon Canyon, Kern Co.; White Mountains, Mono

Co. Colorado: Florissant; Gold Hill; Grant. Idaho: Bloomington; Cub River Canyon; Moscow; Paris. Illinois: Algonquin; Calumet; Carbondale; Gary; Chicago; Elburn; St. Joseph; Urbana; White Heath. Indiana: Chesterton; Hammond; Lafayette. Iowa: Alleman; Ames; Polk City; Sioux City. Kansas: Douglas Co.; Muscotah; Sun City. Massachusetts: Beverly. Michigan: Bay City; Detroit; East Lansing; Eaton Rapids; Hemlock, Saginaw Co.; Livingston Co.; Mason; Salem; Traverse City; Vandalia. Minnesota: Beltrami; Clear River; Eagle Bend; Grand Rapids; Houston Co.; Itasca Park; John Latch State Park, Winona Co.; Mantorville; Minneapolis; Owatonna; Plummer; Ramsay Co.; St. Anthony; St. Peter. Mississippi: "Agricultural College." Nebraska: Kayapaha Co.; Valentine. New Hampshire: (no specific locality). New Jersey: Mullica Hill. New Mexico: Moriarty. New York: Slaterville; Caroline. South Dakota: Big Stone City; Canton. Utah: Hayden; Holt; Kelton; Smithfield. Wisconsin: Dane Co. Wyoming: Burntfork; S. Pass City. Alberta: Banff; Laggan. British Columbia: 290 miles. Manitoba: Fort Churchill, Hudson Bay Ry. mile 505; Sundown. Northwest Territories: Saw Mill Bay. Ontario: Orillia; Ottawa; Sandford; Simcoe; Toronto; Trenton. Quebec: Abbotsford; Aylmer; Montreal; Outrem't; Rupert House. Yukon Territory: Whitehorse. Alaska: Fairbanks; Matanuska Valley.

The location of the type of *nigrinus* is unknown to the author, that of *carneus* from St. Martin's Falls, Albany River, Ontario, is in the British Museum, that of *crassus* from Rhode Island, that of *unicolor* from Illinois, and that of *carbonarius* from Lenox, Massachusetts, are in the Museum of Comparative Zoology at Harvard University.

Flight records: March 18 (Mississippi) to July 29 (Wyoming).

Nemotelus glaber Loew

(Figs. 4, 14)

Nemotelus glaber Loew, 1872, Diptera Americae Septentrionalis Indigena, Cent. X, p. 232; Melander, 1903, Psyche, vol. 10, p. 177; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 190; Curran, 1927, Roy. Soc. Canada, Trans., Sect. V, vol. 21, p. 224.

Nemotelus flavicornis James, 1932 (not Johnson, 1894), Amer. Mus. Nov., no. 517, p. 7 (new synonymy).

Nemotelus fulvicornis James, 1936, Bull. Brooklyn Ent. Soc., vol. 31, p. 86 (new name for *flavicornis* James) (new synonymy).

This species has two forms; one with nearly entirely black legs, the other with extensive yellow areas on tibiae and fore femora. No intergrades have been found. Both occur throughout the range

which extends from Michigan and New York, southwestward into Mexico, and both have been taken together by this author. The type of *glaber* belongs to the black-legged form, but the yellow-legged form appears to be more common. *Fulvicornis,* the holotype of which is a female, has the typical orange-tan base of the antennae and olive-tinged thorax of *glaber* and is here regarded as a synonym. Should the yellow-legged form prove to be a distinct species, the name *fulvicornis* is available for it. The dorsum of the thorax is nearly bare. The body proportions are like those of *picinus* and *centralis,* and it is smaller and has a shorter facial prominence than most *nigrinus* individuals.

Female: Body color shining black with olive tinge, especially on dorsum of thorax. Facial prominence moderately short, stout (Fig. 4a); frontal spots absent; antennae short, compact, yellowish brown except for brownish black terminal pseudosegment. Thorax nearly bare, pubescence at margins of dorsum short, sparse, absent mesally. Mesonotum with thin pale yellow line on each lateral margin extending onto humeral callus. Femora and tibiae black, the apices with very small yellowish areas; apical two segments of fore tarsi and apical segments of middle and hind tarsi infuscated, otherwise pale yellow. Halteres with knobs white, each with brown blotch dorsally, covering about half of distal end. Abdomen concolorous with thorax. Length, 3.3 to 3.5 mm.

Male: Like female except for the usual sexual differences in head (Fig. 4b). Genitalia small; gonostyli strongly and evenly curved, with pointed apices; emargination of ventral bridge of gonocoxites deep, nearly evenly rounded; apodemes convergent; basal lamellae small; aedeagus similar to that of *nigrinus* but smaller, penis valves more blunt and slightly convergent (Fig. 14). Length, 3.3 mm.

Distribution: ILLINOIS: Dubois; Homer; Monticello; Odin; St. Joseph; Urbana; White Heath; Winchester. INDIANA: Lafayette. IOWA: Lacey-Keosauqua State Park, Van Buren Co.; Lewis and Clark State Park, Monona Co.; Onawa. KANSAS: Lawrence; Muscotah Marsh. LOUISIANA: Mound; Opelousas; Shreveport. MICHIGAN: Detroit; Saugatuck. MISSISSIPPI: "Agricultural College." MISSOURI: Columbia; Jefferson City. NEW YORK: Babylon; Long Island. OHIO: Summit Co.; Amherst. TEXAS: Brownsville; College Station; Dallas; Devil's River; Harlingen; New Brunswick; Victoria. VIRGINIA: Potomac Creek. GUERRERO: Acapulco. MORELOS: Cuernavaca. SAN LUIS POTOSI: Pujal; Xilitla.

Holotype, female: Texas, in the Museum of Comparative Zoology at Harvard University; that of *fulvicornis,* female, from Lawrence, Kansas, is in the American Museum of Natural History.

Flight records: March 17 (Brownsville, Texas) to September 27.

Nemotelus canadensis Loew

(Figs. 3, 15)

Nemotelus canadensis Loew, 1861, Diptera Americae Septentrionalis Indigena, Cent. III, pp. 109, 110; Melander, 1903, Psyche, vol. 10, p. 175; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 189; Curran, 1927, Roy. Soc. Canada, Trans., sect. V, vol. 21, p. 225; Leonard, 1928, Cornell Agric. Expt. Sta., Mem. 101, p. 753; Knowlton, 1931, Can. Ent., vol. 63, p. 153.

This widespread species is related to *arator* and *politus.* It is distinguished by the thin lateral yellowish abdominal lines and the narrow black band around the mesal portion of the hind tibiae.

Male: Body color shining black with olivaceous tinge. Facial prominence moderately long, stout (Fig. 3a). Frontal spots pale yellow, contiguous. Antennae brownish black. Thorax densely pilose, the hairs very long, erect, shining white with slight yellow tinge, slightly longer near edges of mesonotum; mesonotum with lateral margin narrowly pale yellow; humeral calli with yellow spot covering less than one half dorsal surface. Halteres with knobs white. Femora black with yellow apices; fore and middle tibiae yellow, hind tibiae with narrow black transverse median band covering less than one third length of tibiae; tarsi pale yellow, the apical segments slightly infuscated. Abdomen concolorous with thorax, less pilose; third, fourth, and fifth abdominal terga narrowly margined laterally with pale yellow; gonostyli with curved lateral edges, apices sharply pointed; gonocoxites with ventral bridge deeply emarginate; aedeagus membranous, the penis valves pointed, longer than penis (Fig. 15). Length 4-5 mm.

Female: Like male except for shorter pile and the usual sexual differences in head. Length 4-5 mm.

Distribution: This species is widely distributed in the following localities: Northwest Territories: Fort Resolution; Hyarling River. Alberta: Lethbridge; Medicine Hat; Taber, Chin; Coaldale. British Columbia: One Hundred Mile House; Oliver. Manitoba: Baldur; Russel. Saskatchewan: Little Quill; Pleasant Creek. Alaska: Anchorage; Matanuska. California: Spaulding, Lassen Co.; Lompoc. Colorado: Roggen. Idaho: Geneva; Henry, Caribou Co.; Montpelier. Minnesota: Douglas Co.; Willmer.

MONTANA: (no specific locality). NEVADA: Wells. NORTH DAKOTA: Turtle Mountains. UTAH: Altonoto; Blue Creek; Brigham; Ephraim; Fielding; Garden City; Garland; Goshen; Hyde Park; Logan; Magna; Manti; Mona; Myton; Sage Junction; Salt Lake City; Slaterville; Smithfield; Spanish Fork; Trenton; Vernal; Wellsville; Woodside. WASHINGTON: Harrah; Roche Harbor; Sunnyside; Toppenish; Yakima. WYOMING: Yellowstone National Park.

The types, from Fort Resolution, N. W. T., are in the Museum of Comparative Zoology at Harvard University.

Flight records: May 1 to September 7.

Nemotelus politus sp. nov.

(Fig. 16)

Nemotelus simplex Snow, 1904, Univ. Kansas Sci. Bull., vol. 2, no. 12, p. 341 (*nomen nudum*).

This species is related to *arator* and *canadensis* which it closely resembles, especially in the form of the genitalia (compare Figs. 15, 16 and 18). It is often difficult to distinguish from *communis,* especially the females. However, the pilosity is different, that of *communis* being thinner, less conspicuous, and the hairs more evenly spaced.

Male: Body color shining black with slight bluish iridescence. Facial prominence moderately long, as in *communis* (Fig. 6a); frons with two pale yellow contiguous spots; antennae brownish black. Thorax rather densely pilose, the hairs silvery white, suberect, longer near margins of mesonotum, long on scutellum. Mesonotum with lateral margins pale yellow; humeral calli with pale yellow spot above each mesothoracic spiracle, covering about one third of each callosity (in a few specimens observed about half of callosity is pale yellow). Knobs of halteres white. Femora black with yellow apices; fore and middle tibiae yellow, hind tibiae mostly black with yellow bases and apices; tarsi pale yellow, apical segments slightly infuscated. Abdomen concolorous with thorax, less pilose, the hairs shorter and sparser than those on thorax. Gonostyli with curved outer edges, the apices sharply pointed; ventral bridge of gonocoxites deeply emarginate at apical margin; penis valves somewhat pointed, longer than penis (Fig. 16). Length, 4-4.5 mm.

Female: Like male except for sexual differences in head; pilosity on dorsum of thorax shorter. Length, 4-4.5 mm.

Distribution: CALIFORNIA: Deep Spring, Inyo Co.; Kern Co.; Owen's Valley, Inyo Co.; Paradise Spring, Monterey Co.; Sardine

Creek, Mono Co.; Victorville, San Bernadino Co. Idaho: Mesa; Middleton; Nampa; Star; Wilder. Montana: (no specific locality). Nevada: Austen; Fallon; Reno. Oregon: Elgin. Utah: Allen Canyon; American Fork; Blue Creek; Brigham; Duchesne; Ephraim; Farmington; Garland; Heber; Hooper; Huntsville; Layton; Logan; Mapleton; Midvale; Morgan; Pintura; Promontory; Smithfield; Vernal. Washington: Walla Walla. Wyoming: South Pass City.

Holotype, male: Midvale, Utah, Aug. 7, 1937 (Knowlton); allotype, female: Huntsville, Utah, June 8, 1938 (Knowlton and Hardy), both in the Snow Entomological Museum at the University of Kansas. Paratypes (six males, two females): Logan, Utah, June 5 and 7, 1939 (G. F. Knowlton and G. S. Stains); American Fork, Utah, Aug. 23, 1936 (G. F. Knowlton); Mapleton, Utah, June 16, 1937 (G. F. Knowlton); Pintura, Utah, August 11, 1929 (R. H. Beamer); Wilder, Idaho, June 27, 1945; Clarkston, Utah, June 10, 1944 (S. L. Wood); Huntsville, Utah, June 27, 1937 (G. F. Knowlton); Midddletown, Idaho, July 19, 1944 (W. E. Shull); Fallon, Nevada, Aug. 12, 1940 (L. J. Lipovsky); Blue Creek, Utah, June 3, 1954 (G. F. Knowlton); Vernal, Utah, June 29, 1954 (G. F. Knowlton).

Flight records: April 4 (Monterey Co., California) to August 12 (Nevada).

Nemotelus arator Melander

(Fig. 18)

Nemotelus arator Melander, 1903, Psyche, vol. 10, p. 179; Aldrich, 1905, Cat. N. Amer. Diptera, Smithson. Inst. Misc. Coll., vol. 46, p. 189; Curran, 1927, Roy. Soc. Canada, Trans., sect. V, vol. 21, p. 225.

The commonest species of California west of the Sierra Nevada Mountains, this species is similar to *politus*, to which it is closely related. Most individuals have a greenish tinge, and the gonostyli are straight and blunt, while *politus* has gonostyli with curved lateral edges and pointed apices. Another similar species, *canadensis*, has lateral abdominal stripes which this species lacks. The types were not seen by the author; however, several topotypical paratypes were available and agree with Melander's description of the species.

Male: Body color shining olivaceous to bluish black. Facial prominence moderately long, as in *communis* (Fig. 6a); frons with two pale yellow contiguous spots; antennae brownish black. Thorax covered with rather long, dense, pale yellow to white pile, longer at lateral margins of mesonotum and on scutellum. Mesonotum

with lateral margins pale yellow, forming a narrow line on each side; humeral calli with small, pale yellow spot above each mesothoracic spiracle. Knobs of halteres white. Femora black with yellow apices; fore and middle tibiae yellow, hind tibiae mostly black with yellow bases and apices; tarsi pale yellow; apical segments slightly infuscated. Abdomen concolorous with thorax, less pilose. Gonostyli straight, rounded at apices; aedeagus as in *politus* (Fig. 16). Length, 4-5 mm.

Female: Like male except for sexual differences in head; pilosity of dorsum of thorax shorter. Length, 4-5 mm.

Distribution: CALIFORNIA: Albany, Alameda Co.; Antioch; Bolinas; Claremont; Davis; Fairfax; La Jolla; Los Angeles; Modoc Co.; Monterey Co.; Mt. Diablo; Palo Alto; Pomona; Pt. Reyes, Marin Co.; Redwood City; Rio Vista; San Diego Co.; Santa Clara Co.; Sardine Creek, Mono Co.; Tolay Creek, Sonoma Co.; Tracy, San Joaquin Co.; Ventura Co.; Yolo Co. WASHINGTON: Kennewick; Prosser; Walla Walla.

Holotype and allotype: San Diego County, California, in the Melander collection, Riverside, California.

Flight records: March 5 (San Diego Co., California) to August 31 (Sonoma Co., California).

Nemotelus tristis Bigot

(Fig. 17)

Nemotelus tristis Bigot, 1887, Ann. Soc. Ent. France, ser. 6, vol. 7, p. 30. Melander, 1903, Psyche, vol. 10, p. 177.

I have not seen the type, but although the original description is extremely brief, the combination of pale frontal spots and nearly completely black legs leaves little doubt as to the identity of this species.

The black, nonmetallic coloration of this species and the wholly black femora and tibiae distinguish it from the closely related *canadensis, arator* and *politus,* which have very similar male genitalia but possess extensive yellow areas on the legs.

Male: Body color shining black. Facial prominence moderately long (Fig. 6a); frontal spots creamy white, contiguous; antennae black. Thorax with rather dense white pile covering entire dorsum, longer near lateral margins, much shorter on scutellum; mesonotum with lateral margins narrowly yellow, forming a very thin line on each side. Each humeral callus with small yellow spot above mesothoracic spiracle. Femora black, tipped with yellowish brown; tibiae entirely black except for small yellowish brown areas at

bases and apices; tarsi with basal segments yellowish brown, the remaining segments progressively blacker toward apices. Halteres with knobs pale creamy white. Squamae slightly infuscated. Abdomen concolorous with thorax, pile less dense. Gonostyli with evenly curved outer edges, apices pointed; aedeagus with penis valves pointed, longer than penis (Fig. 17). Length, 4-5 mm.

Female: Like male except for shorter, more appressed pile on thorax and the usual sexual differences in head. Length, 4.8 mm.

Distribution: California: Davis; Mt. Hamilton, Santa Clara Co.; Oakhurst, Madera Co.; Panoche Creek, Fresno Co.; Putah Canyon, Yolo Co.; Woody, Kern Co.

Types: Bigot apparently described this species from a series of two males and two females collected in California and now in the care of Mr. J. E. Collin in England. Both of the males are damaged, and according to Mr. Collin, one appears to represent a distinct species from the other three specimens in having pale fore and middle tibiae.

Flight records: March 26 to June 8.

Nemotelus jamesi sp. nov.

(Fig. 19)

This species closely resembles a few other species within its range, especially *arator* and *politus*. However, the male genitalia are strikingly different in that the penis valves are sclerotized and sharply pointed in this species. The form of the genital capsule and strong curvature of the aedeagus indicates a close relationship with *variabilis*, a more southern species. The females are without, or with only minute, frontal spots.

Male: Body color shining black with slight bluish iridescence. Facial prominence moderately long (Fig. 6a); frontal spots pale yellow, small, contiguous; antennae brownish black. Thorax with moderately dense pilosity near margins of mesonotum, becoming sparse, short, and sub-appressed mesally; lateral margins narrowly pale yellow; each humeral callus with small pale yellow spot above mesothoracic spiracle covering less than one third of dorsal surface. Femora black with yellow apices; fore and middle tibiae yellow, slightly infuscated; hind tibiae mostly black with yellow apices and more extensively yellow bases; tarsi pale yellow, apical segments infuscated. Halteres with knobs white. Abdomen concolorous with thorax, but less pilose. Gonostyli with apical portions bent inward; penis valves black, sclerotized, pincerlike. Aedeagus strongly curved dorsally (Fig. 19).

Female: Like male except for absence of frontal spots, facial prominence longer, eyes smaller, pubescence shorter.

Distribution: CALIFORNIA: Escondido; Hallelujah Junction, Lassen Co. IDAHO: Fish Haven. NEBRASKA: Norway; Valentine. UTAH: Logan Dry Canyon; Thatcher; Yost. WASHINGTON: Prosser.

Holotype, male, and allotype, female: Prosser, Washington, May 2, 1951 in the collection of the State College of Washington. Paratypes: ten males, nine females, same data as holotype.

Flight records: May 2 to Aug. 25.

Nemotelus variabilis sp. nov.

(Fig. 20)

This widespread southern species ranges from California to Florida. It varies greatly in size and in coloration; the frontal spots are usually absent but are present in some individuals. The genitalia are similar to those of *jamesi* in that the aedeagus is strongly curved, but differ in being considerably narrower.

Male: Body color shining black with bluish iridescence. Facial prominence relatively short (Fig. 4a). Frontal spots absent. (In some, small yellowish or brownish spots are present.) Antennae brown, basal two segments yellowish brown. Thorax with pile short over entire dorsum, very short mesally, longer near lateral margins, short on scutellum. Mesonotum with lateral margins narrowly yellowish tan. Each humeral callus with small yellow spot above mesothoracic spiracle. Halteres with knobs pale buff (white in some). Femora black with yellow apices; fore and middle tibiae yellow, slightly infuscated; hind tibiae black medially with yellow bases and apices; (in some individuals each hind tibia has a narrow medial black band); tarsi pale yellow. Abdomen concolorous with thorax. Gonostyli curved; ventral bridge of gonocoxites strongly convex and deeply emarginate at basal margin; basal lamellae complete, extending nearly to apices of adopemes. Aedeagus strongly curved; prongs of dorsal process convergent; penis and penis valves equal in size, very slender and inconspicuous (Fig. 20). Length, 3.5-4.2 mm.

Female: Like male except for sexual differences in head and shorter pile. Length, 3.2-4.5 mm.

Distribution: ARIZONA: Bill Williams Fork. CALIFORNIA: Arroyo R.; Cazadero; Lone Pine, Inyo Co.; Little Lake, Inyo Co.; Los Angeles; Olanche, Inyo Co.; Panamint Mountains, Inyo Co. FLORIDA: Biscayne Bay; Charlotte Harbor; Hibernia; Homestead; Sanford; St. Augustine; Yankeetown. NEVADA: Carson City. NEW

Mexico: Laguna, Valencia Co.; Las Cruces; Mesilla Park; Roswell. Texas: Anahuac; Brownsville; Hidalgo; Southmost; Victoria. Utah: St. George.

Holotype, male, and allotype, female: Hibernia, Florida, August 7, 1939 (R. H. Beamer), in the Snow Entomological Museum at the University of Kansas.

Paratypes: seven males, two females, Sanford, Florida, April, 1908 and 1926 (Van Duzee); Biscayne Bay, Florida (C. W. Johnson); Yankeetown, Florida, July 7, 1948 (R. H. Beamer); Hibernia, Florida, Aug. 7, 1939 (D. E. Hardy); St. Augustine, Florida; Charlotte Harbor, Florida.

Flight records: March 27 (southern Texas) to August 8 (California).

Nemotelus centralis sp. nov.

(Fig. 21)

Almost indistinguishable from *picinus* except for the genitalia, this species also has much the same range of distribution. The complete basal lamellae of the gonocoxites, the short, convergent apodemes, and the small lobelike penis distinguish it from that species, which has no basal lamellae, long parallel apodemes, and much longer penis.

Male: Body color shining black. Facial prominence as in *glaber* (Fig. 4a), shorter than in *nigrinus,* rather pointed. Frontal spots dark brown, not conspicuous. Antennae brownish black, short, compact. Thorax with short pubescence on dorsum, nearly absent mesally, longer toward margins. Mesonotum with lateral margins narrowly pale yellow. Humeral calli with small yellowish spot above each mesothoracic spiracle. Halteres with knobs brownish apically and dorsally. Femora black with about one fifth of apical portions yellow; fore and middle tibiae yellowish brown, hind tibiae with middle half black, yellow basally and apically; tarsi pale yellow. Abdomen concolorous with thorax. Genital capsule rounded as seen from dorsal aspect; apical process of gonocoxites short, thick; basal lamellae complete, extending nearly to apices of apodemes, which are short, convergent; penis valves short, together forming rounded outline, not extending beyond prongs of dorsal process; penis appearing as a small medial lobe between the longer penis valves (Fig. 19). Length, 3.4 mm.

Female. Unknown.

Distribution: Illinois: Algonquin. Michigan: Detroit; Douglas Lake; Midland Co. Minnesota: Clear River; Eagle Bend;

Wadena; Washington Co. OHIO: Summit Co. SOUTH DAKOTA: Brookings. ONTARIO: Trenton; Simcoe.

Holotype, male; Clear River, Minnesota, June 22, 1922 (Gilmer) in the collection of the University of Minnesota. Paratypes: three males, Brookings, South Dakota, and Washington Co., Minnesota, July 22, 1914; Simcoe, Ontario, June 20, 1939 (G. E. Shewell).

Flight records: June and July.

Nemotelus melanderi Banks

(Figs. 8, 22)

Nemotelus melanderi Banks, 1920, Canadian Ent., vol. 52, p. 65; Curran, 1927, Roy. Soc. Canada, Trans., sect. V, vol. 21, p. 225; Leonard, 1928, Cornell Agric. Expt. Sta., Mem. 101, p. 753.

This coastal species can easily be distinguished from other eastern species by the small size and short facial projection. In these respects it resembles very closely the southwestern species *halophilus*. However, there are great differences in the genitalia (cf. Figs. 22, 23).

Male: Body color shining brownish black. Facial prominence short (Fig. 8a) rugose, haired, with slight depression below antennae. Frontal spots absent. Antennae brownish black. Thorax with long thin pile on dorsum. Mesonotum with lateral margins yellowish brown, forming very thin lines which extend onto humeral calli above mesothoracic spiracles. Halteres with knobs ivory-white. Femora dark brown, the apices pale; tibiae brown with pale bases and apices; tarsi pale yellow. Abdomen concolorous with thorax. Genitalia small, the gonostyli curved; gonocoxal apodemes short, convergent; basal lamellae large, extending nearly to apices of apodemes; penis valves appear as small lobes on each side of penis which extends slightly beyond them (Fig. 22). Length, 3 mm.

Female: Like male except for sexual differences in head (Fig. 8b).

Distribution: FLORIDA: Paradise Key; Royal Palm Park. MARYLAND: Chesapeake Beach. MASSACHUSETTS: Beverly; Gloucester; Woods Hole. NEW JERSEY: Lake Branch; Morgan. NEW YORK: Calverton, Long Island; Cold Spring Harbor; Montouk, Long Island; Orient, Long Island; Southold. VIRGINIA: Mathias Point. NOVA SCOTIA: Baddeck; Cape Breton.

The types, twelve males, Cheasapeake Beach, Maryland, two females, Bayville, New York, are in the Museum of Comparative Zoology at Harvard University.

Flight records: April 4 (Florida) to September 4 (Virginia)

Nemotelus lambda James

(Figs. 7, 24)

Nemotelus lambda James, 1933, Jour. Kansas Ent. Soc., vol. 6, pp. 70-71; 1936, Bull. Brooklyn Ent. Soc., vol. 31, pp. 86-91.

The globose head, short facial projection, and large pale markings on the head, thorax and abdomen set this species apart from all others from this area.

Male: Body color shining black with ivory-white markings. Facial prominence very short, depressed between apex and origin of antennae (Fig. 7a). Frontal spots large, ivory-white, contiguous. Antennae black. Thorax densely pilose, the hairs erect, very long over entire dorsum. Humeral calli and lateral margins of mesonotum ivory-white, the latter broad. Knobs of halteres white. Femora black with whitish apices; fore and middle tibiae yellow, hind tibiae with black middle portion and yellow bases and apices; tarsi yellowish white. Abdomen concolorous with thorax, less pilose; second, third, and fourth tergites with conspicuous lateral margins, ivory-white, obsolete on first and fifth segments; second and third sternites with lateral and posterior margins whitish. Gonostyli very pointed at apex, inner edge broadly lobate in middle region (Fig. 24); apical processes of gonocoxites shorter than gonostyli. Gonocoxites deeply emarginated on each side of basal apodemes; basal lamellae absent; basal apodemes very long, parallel. Aedeagus attached to gonocoxites by broad membrane, apical prongs of dorsal process slightly convergent (Fig. 24b). Length, 4-4.5 mm.

Female: Like male except for the following: Facial prominence short, without depression above. Eyes widely separated. Frontal spots much larger, not contiguous; posterior ocular orbits prominently ivory-colored on lower half (Fig. 7b). Thorax with pile much shorter. Abdomen with narrow but definite whitish lateral margins.

Distribution: New Mexico: Albuquerque; Jemez Springs; Roosevelt County.

Holotype, male: Roosevelt County, New Mexico, July 7, 1927, in the Snow Entomological Museum at the University of Kansas. Allotype, female: Jemez Springs Mountains, New Mexico, May, in the collections of Purdue University.

Flight records: May and July.

Nemotelus halophilus sp. nov.

(Fig. 23)

Although resembling *melanderi* very closely, this species appears to be more closely related to the following two species as indicated by the genitalia (Figs. 22-27). Externally *halophilus* may be distinguished by the buff or yellow lateral abdominal line. This species has been found only near salt marshes in New Mexico and Kansas and along the gulf coast of Texas.

Male: Body color shining brownish black. Facial prominence short (Fig. 8a), haired, profile with slight depression below antennae. Frontal spots absent. Antennae brownish black. Thorax with long thin pile on dorsum. Mesonotum with lateral margins narrowly yellowish brown, forming thin lines which extend onto humeral calli above mesothoracic spiracle. Halteres with knobs white. Femora dark brown with yellowish brown apices; tibiae dark brown with yellowish brown bases and apices; tarsi pale yellow. Abdomen concolorous with thorax except that lateral margins of terga and sterna three to six are yellowish buff. Pilosity sparser than on thorax. Genitalia small; emargination of ventral bridge of gonocoxites evenly rounded, moderately deep; gonocoxal apodemes long, divergent; basal lamellae absent; aedeagus short; prongs of dorsal process pointed, divergent; penis slightly shorter than penis valves. Length, 3 mm.

Female: Like male except for sexual differences in head, (Fig. 8b), pilosity shorter on dorsum of thorax, abdominal lateral lines narrower. Length, 3 mm.

Distribution: KANSAS: Clark Co.; Liberal; Stafford Co. Salt Marsh. NEW MEXICO: 25 mi. west of Tularosa. TEXAS: Corpus Christi (holotype, allotype, and 15 paratypes); Galveston; Padre Island.

Holotype, male, and allotype, female: Corpus Christi, Texas, January 1, 1946 (R. H. Beamer), in the Snow Entomological Museum at the University of Kansas.

Flight records: December 12 and January 1 (southern Texas), June 22 (Kansas).

Nemotelus flavicornis Johnson

(Fig. 27)

Nemotelus flavicornis Johnson, 1894, Proc. Acad. Nat. Sci. Philadelphia, p. 272; Melander, 1903, Psyche, vol. 10, p. 191; Aldrich, 1905, Cat. N. Amer. Diptera, Sm. Inst., p. 190.

This species is closely related to *slossonae*. These two species are unique among the species of this subgenus in having largely

whitish abdomens in the males. The thorax of *flavicornis* has a greenish blue iridescence and the humeral calli are completely creamy white.

Male: Facial prominence black, shining, one third of width of eye. Antennae yellowish tan, terminal pseudosegment darker, flagellum black. Thorax shining black with bluish luster. Pubescence short, sparse. Lateral margins of mesonotum pale yellow forming broad lateral lines. Humeri entirely pale yellow. Halteres with knobs white. Fore and middle femora yellowish with brownish tinge, hind femora mostly yellow with medial black band; fore and middle tibiae yellowish, hind tibiae with basal half and apical tip yellow, apical half excepting tip, black; tarsi pale yellow. Wing vein R_4 absent. Abdomen pale yellow, fourth tergite with median black triangle, fifth tergite black basally. Genitalia small, widest toward apex, ventral bridge shallowly emarginate at apical margin; apical processes of gonocoxites short, more widely separated than their lengths (Fig. 27). Length, 3 mm.

Female: Unknown.

Distribution: Florida: Key Largo, July 19, 1939 (R. H. Beamer). The only other locality record at present is the type locality in Jamaica.

Holotype, male: Kingston, Jamaica, in the Museum of Comparative Zoology at Harvard University.

Nemotelus slossonae Johnson

(Fig. 25)

Nemotelus slossonae Johnson, 1895, Proc. Acad. Nat. Sci. Philadelphia, p. 304; Melander, 1903, Psyche, vol. 10, p. 181; Johnson, 1913, Bull. Amer. Mus. Nat. Hist., vol. 32, p. 49.

This small species has a black thorax and mostly white abdomen in the male. The female has white lateral abdominal lines. It is closely related to *flavicornis,* another Floridian species, the genitalia of both being very similar.

Male: Facial prominence shining, less than one third of width of eye. Frontal spots creamy white. Antennae brown. Thorax shining black; pubescence on dorsum very sparse. Mesonotum with lateral edges pale yellow, forming broad lines from humeral calli to wing bases. Humeral calli creamy white except anterior corners which are brownish. Halteres with knobs white. Femora black except for pale yellow apices; fore tibiae yellow, slightly infuscated, middle and hind tibiae brownish black with pale yellow bases and apices; tarsi pale yellow. Wing vein R_4 absent. Abdomen mostly creamy white; first tergite with black spot immediately beneath

scutellum; fourth tergite with three indistinct brownish spots; fifth tergite with anterior half brownish black. Sternites mostly white with indistinct brownish blotches. In one specimen the fourth tergite has only one medial triangular spot. Genitalia very small, similar to that of *flavicornis;* apical prongs of dorsal process of aedeagus divergent, longer than the separation between them (Fig. 25). Length, 3 mm.

Female: Like male except for sexual difference in head, and in abdomen which is black with thin lateral pale yellow lines on margins of terga two to five. Length, 3.4 mm.

Distribution: FLORIDA: Big Pine Key; Fruitville; Homestead; Key West; Merritt Islands; Mims; Saddlebunch Keys; Tampa.

Holotype, male: Charlotte Harbor, Florida, in the Museum of Comparative Zoology at Harvard University. Allotype, female: Punta Gorda, Florida, Nov. 11, 1911, in the American Museum of Natural History, New York City.

Flight records: January 29, February 12, March 18, April 4, June 22, July 20, 25, August 11, December 29.

Nemotelus albimarginatus James

(Figs. 5, 26)

Nemotelus albimarginatus James, 1936, Bull. Brooklyn Ent. Soc., vol. 31, pp. 86, 87.

This species is easily distinguished from the similar *canadensis* by the creamy-white apices of the fifth and sixth abdominal terga and larger pale areas on the sides of the thorax and abdomen.

Male: Shining black with slight bluish iridescence. Facial prominence moderately long, about one third to one half width of eye viewed laterally; frontal spots contiguous, large, creamy white; antennae brownish black. Thorax densely pilose, hairs very long, white; suberect; mesonotal lateral margins broadly creamy white; humeral calli nearly entirely creamy white; supra-alar calli marked with creamy white; halteres with knobs white. Femora black with pale yellow apices; fore and middle tibiae yellow, hind tibiae yellow, each with transverse black mesal annulus; tarsi pale yellow, terminal segment slightly infuscated. Abdomen concolorous with thorax except the lateral margins of both terga and sterna (except the first segment) and apices of fifth and sixth terga and third, fourth, and fifth sterna which are creamy white. Gonostyli broad with distinct lobe on inner edge; emargination of ventral bridge of gonocoxites evenly rounded, moderately deep; penis valves narrow, pointed apically as seen from dorsal aspect (Fig. 26). Length, 5 mm.

Female: Like male except for shorter pilosity, especially on dorsum of thorax, and the usual sexual differences in head.

Distribution: California: Benton, Mono Co.; Big Pine and Little Lake, Inyo Co.; Panocho Creek, Fresno Co.; Wood Lake, Tulare Co. Idaho: Caldwell; Wilder. Nevada: Valley Hot Spring, Douglas Co. Oregon: Burns. Utah: Beaver; Delta; Duchesne; Farmington; Hayden; Hooper; Kingston; La Point; Myton; Ogden; Plain City; Riverdale. Washington: Walla Walla; Yakima. British Columbia: Oliver.

Holotype, male: Kingston, Utah, June 19, 1935 (C. J. Sorenson), in the United States National Museum.

Flight records: March 24 (Fresno Co., California) to August 6 (British Columbia).

Nemotelus sabroskyi sp. nov.

(Fig. 28)

This coastal species has rather small frontal spots and pale yellowish buff halteres which distinguish it from the slightly larger but similar *communis.* The pile on the dorsum of the thorax is also much shorter.

Male: Body color shining black with slight bluish iridescence, more pronounced on face. Facial prominence moderately long (Fig. 1a); frontal spots pale yellow, small, contiguous; antennae brownish black. Thorax rather sparsely pilose, hairs white, moderately long near edges of dorsum, becoming very short and nearly absent mesally, extremely short on scutellum. Mesonotum with lateral margins narrowly yellowish tan. Each humeral callus with small yellowish spot above mesothoracic spiracle. Fore femora black with distal one third yellowish brown, second and third femora black with distal one fourth yellowish brown; fore and middle tibiae yellowish brown; hind tibiae with broad black band on middle portion, covering one third to one half of tibial length, basal and distal areas yellowish brown; tarsi yellowish tan. Halteres with knobs pale yellowish buff, paler beneath. Abdomen concolorous with thorax, pile very short, sparse. Gonostyli sharply pointed, expanded on inner edges before apices; aedeagus membranous, darker apically, penis with well-marked indentation at apex (Fig. 28). Length, 4 mm.

Female: Like male except for shorter pile and the usual sexual differences in head. Frontal spots usually very small, yellowish tan or sometimes yellow. Length, 4 mm.

Distribution: MARYLAND: Chesapeake Beach. NEW JERSEY: Atlantic City. NORTH CAROLINA: Southport.

Holotype, male U. S. N. M. no. 63263, and allotype, female: Southport, North Carolina, October 10, 1948 (C. W. Sabrosky) in the United States National Museum. Paratypes: 10 males, 14 females, same data.

Flight records: September 2 (New Jersey) to October 10 (North Carolina).

Nemotelus communis sp. nov.

(Figs. 6, 29)

Specimens of this species, usually determined as *canadensis,* differ from that species in lacking yellowish lateral margins on the third, fourth, and fifth abdominal terga, and in having a more tapering facial prominence. The pile on the dorsum of the thorax is finer and the black areas on the hind tibiae are much more extensive. This species resembles more closely *politus,* which occurs in much of its range of distribution. The humeral spot in *communis* is usually larger, covering half of each humeral callus, and the male genitalia differ considerably. In *politus* the ventral bridge is deeply emarginated apically and the aedeagus is short, the penis shorter than the penis valves. In *communis* the ventral bridge is not emarginate but has a double notch effect. The penis is equal in length to the penis valves (Figs. 16 and 29).

Male: Body color shining black with slight bluish iridescence more pronounced on dorsum of thorax. Facial prominence rather long and tapered (Fig. 6a) with two contiguous creamy white spots above antennae. Antennae brownish black. Thorax pilose on dorsum, the hairs rather evenly spaced, white, erect, their lengths about equal over entire dorsum. Humeral calli with large creamy white spot covering about half of dorsal surface of each. Lateral margins of mesonotum creamy white, moderately broad. Halteres with knobs white. Femora black with yellow apices; fore and middle tibiae yellow, hind tibiae mostly black with yellow bases and apices; tarsi pale yellow, the apical segments tinged with light brown. Abdomen entirely black with long white pile, sparser than on thorax. Genitalia large; ventral bridge of gonocoxites with an apparent double notch on posterior margin; gonostyli curved, with rounded apices; aedeagus membranous, the penis valves bent outward at apices; penis equal in length to penis valves; aedeagal apodeme short, directed dorsad (Fig. 29). Length, 4.5 mm.

Female: Like male except for shorter pile and the usual sexual differences in head (Fig. 6b). Length, 4.8 mm.

Distribution: Arizona: Apache Co.; Chiricahua Mountains; Faraway Ranch. Colorado: Macedonia; Manzanola; Roggen; Sugar City; Vineland; Wray. Idaho: Pine Lodge; Stone. Illinois: Chicago. Indiana: Lafayette. Iowa: Ocheyedan. Kansas: Leavenworth Co.; Liberal; Meade Co.; Medicine Lodge; Menlo; Stafford Co. Minnesota: Big Stone Co. Montana: Hamilton. Michigan: Midland Co. Nebraska: Morrill Co.; Willow Island, Dawson Co. New Mexico: Albuquerque; Belen; Socorro. Oregon: Rest Lake. South Dakota: Aberdeen; Jefferson; Rapid City. Utah: American Fork; Antelope; Bert; Blue Creek; Brigham; Clawson; Delta; Duchesne; Goshen; Huntsville; Lampo; La Point; Low; Lyndyl; Murray; Myton; Plain City; Promontory; Richfield; Riverton; Roosevelt; Salt Lake City; Santaquin; Springville; St. George; Syracuse; Tremonton; Tridell; Vernal. Wyoming: Teton Pass. Manitoba: Baldur; Beulah; Red Deer River.

Holotype, male, and allotype, female: Duchesne, Utah, June 29, 1954, on goldenrod (Knowlton), in the Snow Entomological Museum at the University of Kansas. Paratypes: thirty males and thirty females, same data as holotype.

Flight records: June 6 (Utah) to September 15 (New Mexico).

Nemotelus beameri James

(Figs. 1, 32)

Nemotelus beameri James, 1933, Jour. Kansas Ent. Soc., vol. 6. p. 70.

The relatively long, tapering facial projection is distinctive in most individuals of this species, but in a few of the specimens available the projection is not noticeably different from that of some specimens of *nigrinus*. The large genitalia with membranous aedeagus and lanceolate penis are distinctive (Fig. 32.).

Female: Body color shining black. Facial prominence long, its upper margin, viewed laterally, forming a continuous gentle sloping line with the vertex (Fig. 3b); frontal spots absent; antennae black. Thorax sparsely pilose, the hairs white and short, longer and more dense at lateral edges of mesonotum, very short on scutellum. Mesonotum with lateral margins pale yellow, resulting in a thin line on each side; humeral calli with small, pale yellow spot above each mesothoracic spiracle. Knobs of halteres white, slightly buff in some. Femora black with yellow apices; fore and middle tibiae yellow; hind tibiae mostly black with yellow bases and apices;

tarsi pale yellow. Abdomen concolorous with thorax, pile more sparse. Length, 4.5-5 mm.

Male: Like female except for sexual differences in head (Fig. 1a), dorsum of thorax with pilosity much longer, less sparse, but short on scutellum. Genitalia large; gonostyli long, rather straight; apical process of gonocoxites longer than gonostyli; ventral bridge of gonocoxites very shallowly emarginate; apodemes long, parallel; basal lamellae large, extending to near apices of apodemes. Aedeagus very long; penis valves slightly longer than penis, which is lanceolate and indented at apex. Length, 4.5-5 mm.

Distribution: ARIZONA: Tucson. COLORADO: Boulder; Florissant; Glen Haven; Greeley. ILLINOIS: Chicago. IOWA: Dan Green's Stough, Clay Co.; Ocheyedan; Ruthven. KANSAS: Meade Co. MINNESOTA: Lesueur Co. MONTANA: Big Timber; Drummond. NEBRASKA: Lakeside, Sheridan Co. NEVADA: Ely. NEW MEXICO: Sapelle. SOUTH DAKOTA: (no specific locality). UTAH: Duchesne; Greenville; Helper; Kanab; Manila; Springville. WYOMING: Lander; Lusk; Moran; Tie Siding.

Holotype, female: Northgate, Colorado, August 20, 1931, (R. H. Beamer) in the Snow Entomological Museum at the University of Kansas. Allotype, male (here designated): Drummond, Montana, August 11, 1931 (J. O. Nottingham), also in the Snow Entomological Museum.

Flight records: March 8 (Arizona) to September 12 (Minnesota).

Nemotelus picinus sp. nov.

(Fig. 30)

This species is distributed in the Great Lakes region west to Minnesota and Iowa, and is almost indistinguishable externally from *centralis*. The differences in male genitalia, as given in the discussion of that species, are so distinct that determination of the males is not difficult. Unfortunately, no adeqaute differences in the females have been found.

Male: Body color shining black (some individuals with slight bluish luster). Facial prominence as in *glaber*, pointed (Fig. 4a). Frontal spots absent (a few individuals with small yellow spots). Antennae brown (basal segments slightly orange brown in some individuals), small. Thorax with short pubescence on dorsum, longer near lateral margins, becoming absent mesally. Mesonotum with lateral margins narrowly yellow. Humeral calli with small yellow spot above each mesothoracic spiracle. Halteres with knobs

brown dorsally and apically. Femora black with yellow apices; fore tibiae yellowish brown, middle and hind tibiae brownish black; tarsi pale yellow. Abdomen concolorous with thorax. Genital capsule with rectangular shape as seen from dorsal aspect; gonostyli slightly curved, with subapical lobe on inner margin. Gonocoxal apodemes long, parallel; basal lamellae absent; penis valves longer than penis, truncated and wider at apices (Fig. 30). Length, 4 mm.

Female: Like male except for sexual differences in head. Length, 4 mm.

Distribution: Illinois: Algonquin; Chicago; Monticello; Princeton. Indiana: Lafayette. Iowa: Ames. Michigan: Cheboygan Co.; Lenawee Co.; Vandalia. Minnesota: Minneapolis; St. Anthony Park; Wadena. Wisconsin: Dane Co.; Madison; Wingra Lake. Ontario: Toronto. Quebec: Hemmingford.

Holotype, male: Chicago, Illinois, July 6, 1895 (Wheeler); allotype, female: Algonquin, Illinois, July 20, 1907 (Nasen), both in the collections of the Illinois Natural History Survey, Urbana, Illinois. Paratypes (ten males and five females): Ames, Iowa, July 10, 1951 (M. Cochran), July 12, 1947 and June 10, 1951 (J. Laffoon), Minneapolis, Minnesota, July 5, 1922 (A. Hertig), Wadena, Minnesota, July 4, 1922 (W. Hoffman), Dane County, Wisconsin, July 6, 1951, Princeton, Illinois, July 2, 1936 (Burks).

Flight records: June and July.

Nemotelus tenuistylus sp. nov.

(Fig. 31)

The broad lateral thoracic lines and nearly entirely yellow humeral calli are conspicuous characters which separate this species from all others with completely black abdomens. It is a widespread western species, its relationship to other species indefinite.

Male: Body color shining black with slight bluish iridescence. Facial prominence moderately long as in *communis* (Fig. 6a); frontal spots creamy white; antennae brownish black. Thorax with short, subappressed pile on dorsum, longer near lateral margins; mesonotum with lateral edges broadly yellow, the lateral line widest posteriorly; humeral calli nearly entirely pale yellow, except for anterior corner which is black. Halteres with knobs white. Fore femora with basal halves black, apical halves yellow, middle and hind femora with less yellow at apices; fore and middle tibiae yellow, hind tibiae with narrow black mesal bands; tarsi pale yellow. Abdomen concolorous with thorax, sparsely pilose. Gonostyli

nearly straight, long, at least distal half tapered; emargination of ventral bridge of gonocoxites shallow, V-shaped, acute; gonocoxal apodemes long; aedeagus long, narrow, penis valves sharply divergent at apices; prongs of dorsal process several times longer than their basal separation (Fig. 29). Length 3.4 mm.

Female: Like male except for sexual differences in head and shorter pilosity on dorsum of thorax. Length, 3.2 mm.

Distribution: CALIFORNIA: Needles. IDAHO: Nampa. KANSAS: Liberal; McPherson Co.; Meade Co. NEVADA: Carson City; Fallen. NEW MEXICO: Las Cruces. UTAH: Corinne; Garland; Grantsville; Randlett; St. George.

Holotype, male U. S. N. M. no. 63262: Las Cruces, New Mexico, June 16, 1917 (Aldrich); allotype, female: same locality, Sept. 25, 1895 (Cockerell), both in the United States National Museum.

Flight records: June 15 (Utah) to September 25 (New Mexico).

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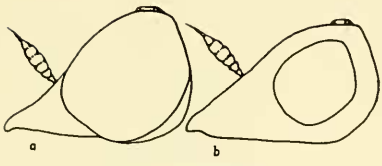
FIGURES 1-9

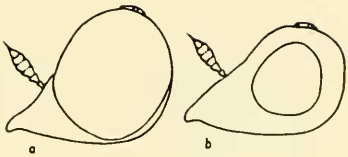
FIGS. 1-8. Lateral aspects of heads of certain species of *Melanonemotelus;* a. male, b. female.

FIG. 9. *Melanonemotelus* wing.

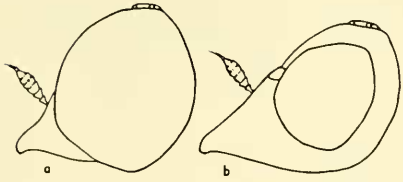
FIGS. 1-9



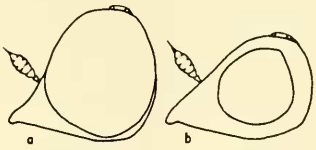
1. beameri



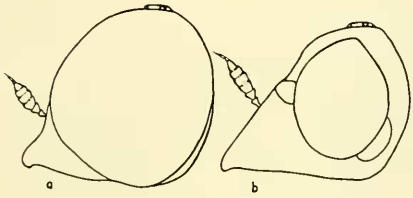
nigrinus



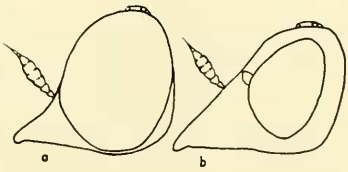
3. canadensis



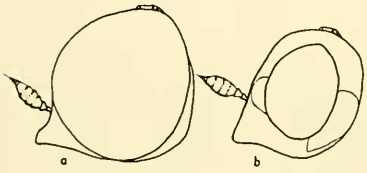
4. glaber



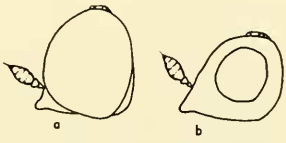
5. albimarginatus



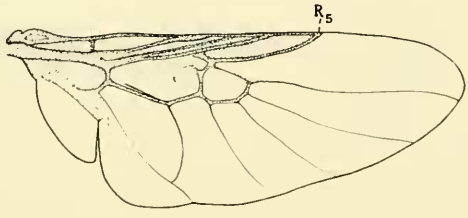
6. communis



7. lambda



8. melanderi



9

FIGURES 10-14

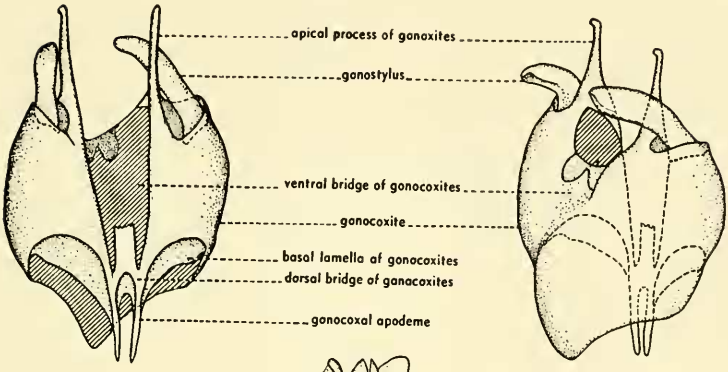
FIG. 10. Laterodorsal aspect of genital capsule of male.

FIG. 11. Lateroventral aspect of genital capsule of male.

FIG. 12. Laterodorsal aspect of aedeagus.

FIGS. 13 and 14. a. Dorsal aspect of genital capsule. b. Dorsal aspect of aedeagus. c. Lateral aspect of gonostylus. d. Lateral aspect of apex of genital capsule, showing apical process of gonocoxites.

FIGS. 10-14



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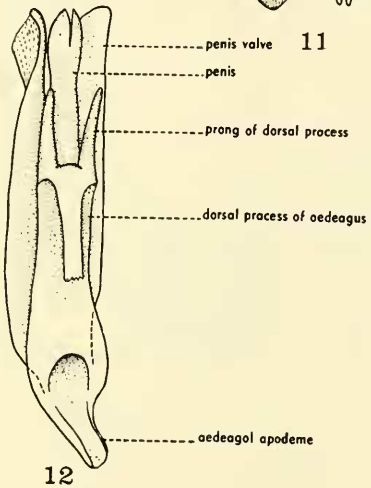

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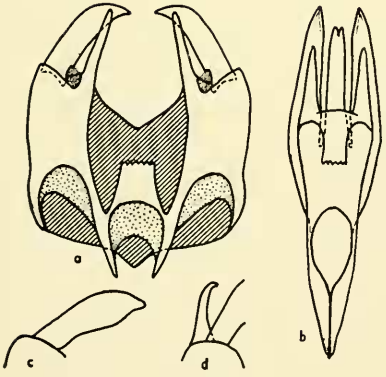
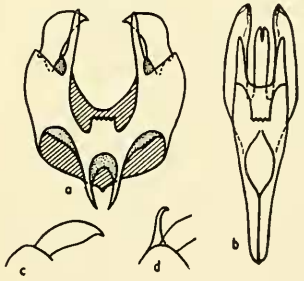


13. nigrinus

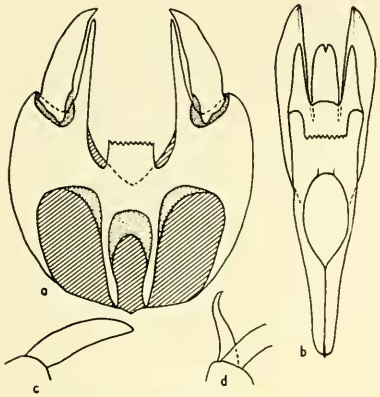


14. glaber

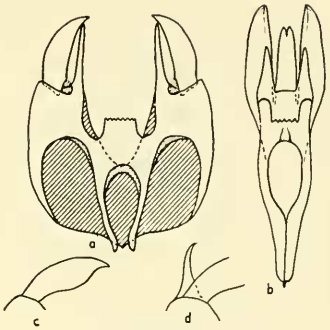
FIGURES 15-20

FIGS. 15-20. a. Dorsal aspect of genital capsule of male. b. Dorsal aspect of aedeagus. c. Lateral aspect of gonostylus. d. Lateral aspect of apex of genital capsule, showing apical process of gonocoxites.

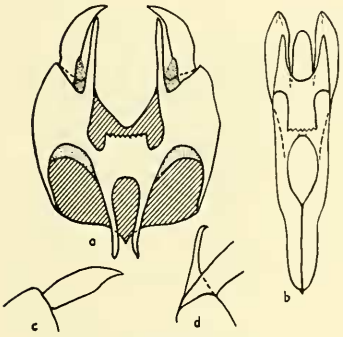
FIGS. 15-20



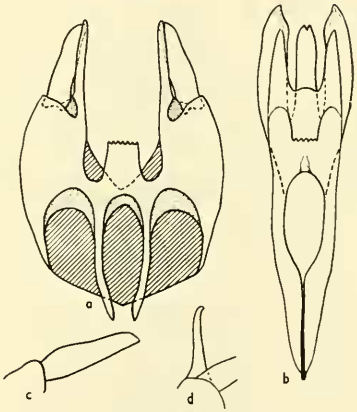
15. canadensis



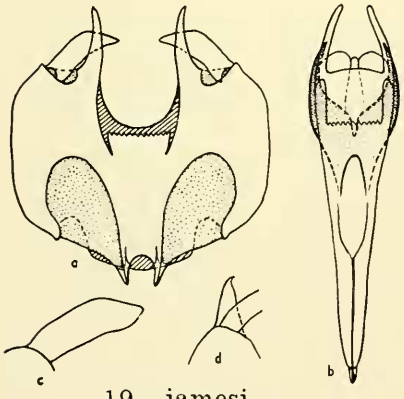
16. politus



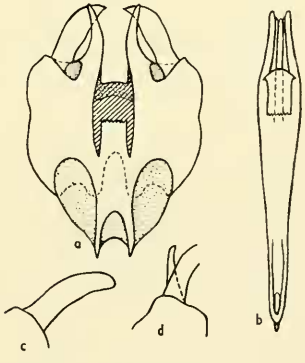
17. tristis



18. arator



19. jamesi

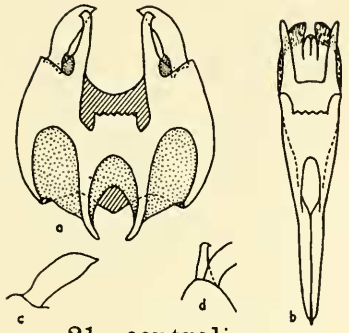


20. variabilis

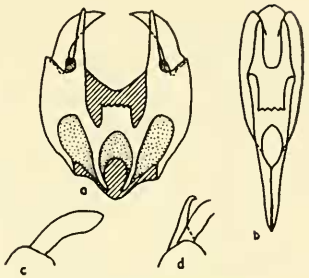
FIGURES 21-27

FIGS. 21-27. a. Dorsal aspect of genital capsule of male. b. Dorsal aspect of aedeagus. c. Lateral aspect of gonostylus. d. Lateral aspect of apex of genital capsule, showing apical process of gonocoxites.

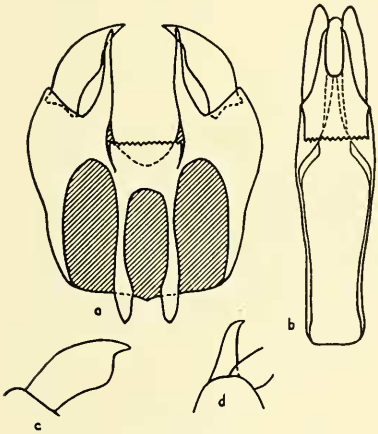
FIGS. 21-27



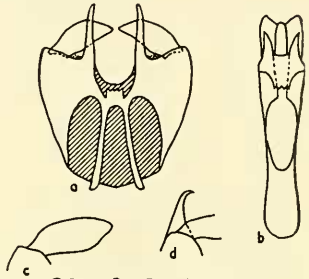
21. centralis



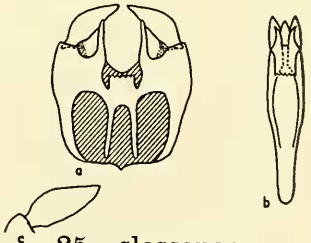
22. melanderi



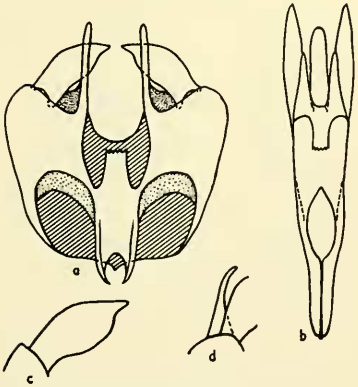
24. lambda



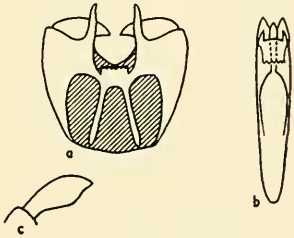
23. halophilus



25. slossonae



26. albimarginatus

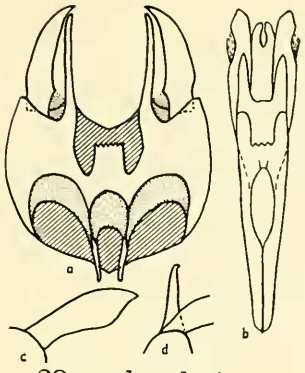


27. flavicornis

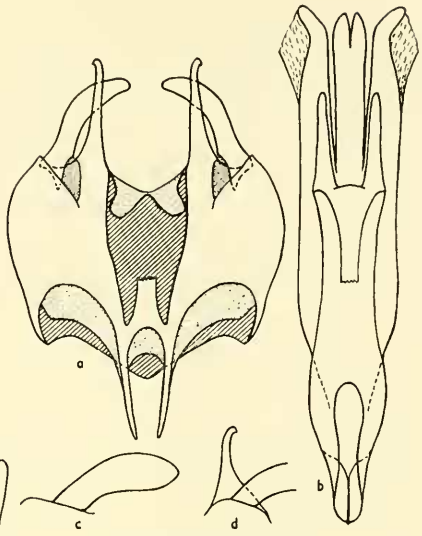
Figures 28-32

Figs. 28-32. a. Dorsal aspect of genital capsule of male. b. Dorsal aspect of aedeagus. c. Lateral aspect of gonostylus. d. Lateral aspect of apex of genital capsule, showing apical process of gonocoxites.

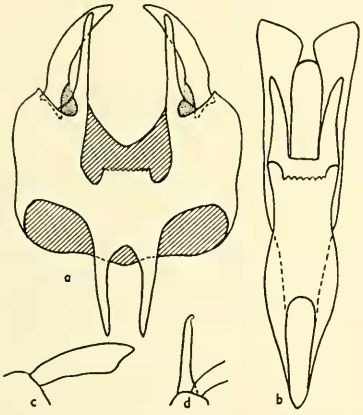
FIGS. 28-32



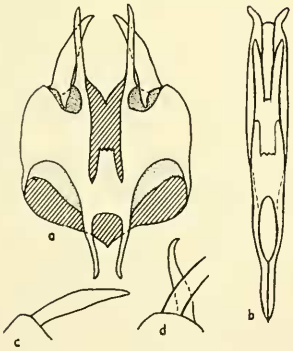
28. sabroskyi



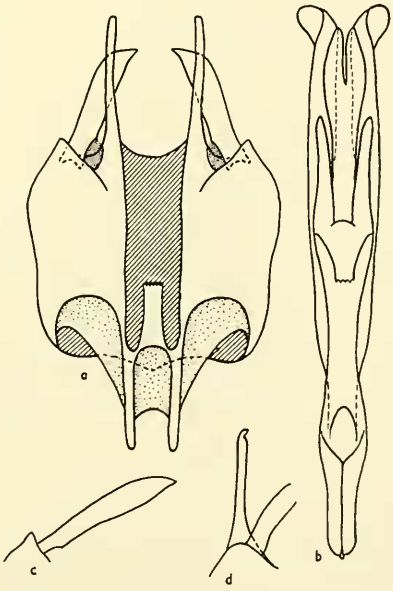
29. communis



30. picinus



31. tenuistylus



32. beameri